



Sleep quality in elderly individuals and related factors

Sleep quality

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Abstract

Aim:The aim of the present study is to evaluate sleep quality in the elderly living in Kırşehir city center and to identify related factors. **Material and Method:** Subjects of this descriptive study included elderly individuals registered in family health centers in Kırşehir city center. The sample included 700 elderly individuals selected using stratified sampling method. Data were collected via face-to-face interviews conducted on December 3rd 2013, 2016, using a questionnaire on sociodemographic characteristics, Pittsburgh Sleep Quality Index, and UCLA Loneliness Scale. Ethics committee approval and informed consent of patients were obtained. Numbers, percentages and mean values, as well as logistic regression (enter method) were used in statistical analysis. **Results:**The mean sleep quality score was 7.63 ± 3.23 , and 70.4% of them had poor sleep quality. According to the logistic regression analysis, risk factors that had a negative effect on sleep quality were female sex, low educational level, being single/divorced, having no children, negative perception of economic status, presence of a chronic disease, regular medication use, daytime sleepiness, and feelings of loneliness. **Discussion:** According to the findings of the study, elderly individuals had poor sleep quality, and several factors such as demographic and socioeconomic factors had a negative effect on sleep quality. According to the results of the present study, we suggest conducting community-based studies to evaluate risk factors that have a negative effect on sleep quality in elderly individuals, while considering psychological and social care, support, and care and management of chronic illnesses.

Keywords

Aged; Sleep; Loneliness; Nursing

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Introduction

Aging results in various problems due to irreversible impairment and deterioration in physiological, psychological, and social functions of an individual [1]. As a physiological problem, poor sleep quality is common in elderly individuals [2]. According to the literature on the subject, elderly individuals have poor sleep quality and higher prevalence of poor sleep quality (41.9%–77%) [3–5]; however, sleep quality has also been suggested to be influenced by individual and psychosocial factors [3]. These factors include marital status, age, number of children, the presence of chronic illnesses, medication use, educational level, socioeconomic status, and loneliness [3–11].

Sleep satisfaction with good sleep quality in elderly individuals is crucial in preserving and maintaining memory, cognitive skills, attention, emotions, motor functions as well as functions related to the neuroendocrine system, hence the individual's health, well-being, and quality of life [12]. Conversely, failure to satisfy sleep needs in elderly individuals may result in falls, emotional problems, and increase in morbidity and mortality rates [2].

Nurses play an important role in the evaluation, care, and treatment of elderly individuals. Therefore, following detection of problems of elderly individuals, nurses should prioritize their needs and provide services according to individual requirements [1]. Studies are required to identify risk factors related to sleep quality in elderly individuals in Turkey, as sleep disorders are one of the most common and important problems of elderly individuals. The present study aims to evaluate sleep quality of elderly individuals living in Kırşehir city center and describe related factors.

Material and Method

This descriptive study was conducted on subjects 65 years and older in Kırşehir, Turkey between December 3 and December 31, 2016. Subjects of this study included 7148 elderly individuals registered at nine family health centers (FHCs) located in Kırşehir city center. To estimate the sample size, we used a table titled “Estimating population proportion with specified absolute precision” that was included in a guideline published by the World Health Organization [13]. In addition, the prevalence rate reported by Bilgili et al. (50.5%) was used to calculate the sample size required for the study [6]. Furthermore, the calculated sample size (50.0%) was 600 subjects, considering a confidence interval (CI) of 95.0% and a relative precision of 4.0%. A sample size of 700 subjects, which is higher than the calculated sample size, was used in the study considering the possibility of missing data. The stratified sampling method was used in the study to select the sample. FHCs were designated as the criteria for stratified sampling, and nine main strata were specified, as there was a total of nine FHCs in the city center where the study was conducted. The number of elderly individuals registered at FHCs included in the study is indicated below.

FHCs	Number of elderly individuals	Stratum weight	Number of elderly individuals included in the sample
1. FHC	349	0.048	34
2. FHC	1743	0.243	171
3. FHC	762	0.106	75
4. FHC	959	0.134	94
5. FHC	550	0.076	54
6. FHC	560	0.078	55
7. FHC	890	0.124	87
8. FHC	432	0.060	42
9. FHC	903	0.126	88

FHC, family health center

Elderly individuals who were admitted to FHCs during the study period and provided consent to participate in the study were included in the study until the specified sample size for each FHC had been reached.

A questionnaire prepared by researchers based on the literature [1–11] was used for data collection. The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep quality, and UCLA Loneliness Scale (ULS) was used to determine levels of loneliness in elderly individuals. Data were collected by researchers in FHCs using a face-to-face interview technique. As elderly individuals tend to have a shorter attention span and difficulty in understanding questions, the number of questions was limited; and detailed questions on loneliness and sleep quality were not addressed. In addition, physical problems, chronic illnesses, and medication use that may affect sleep quality in elderly individuals were not evaluated in detail. These factors may be considered as limitations of the present study.

Developed by Russell et al. (1980) [14], the ULS was used in the study for the purpose of determining the loneliness levels in the elderly. The Turkish validity and reliability of the scale were confirmed by Demir (1989) [15]. Among 20 items of the scale, 10 were reverse-coded, and the other 10 were straight-coded. Each item on this scale represented emotions and thoughts about social relations, and individuals were asked to mark the frequency of the conditions in these items on a four-point Likert scale. The highest score obtainable from the scale was 80, and the lowest was 20. Based on the total scores received by individuals, a score between 20 and 34 was considered as mild loneliness, a score between 35 and 48 as moderate loneliness, and a score above 48 as severe loneliness. Cronbach's alpha internal consistency coefficient of the ULS has been determined to be 0.96 [14,15].

Developed by Buysse et al. (1989), the PSQI was used in the study to determine the sleep quality of elderly individuals [16]. The Turkish validity and reliability study of the scale was conducted by Ağargün et al. [17]. This scale is a screening and assessment test based on self-reporting, which provides detailed information about sleep quality in the past month, and identifies type and severity of sleep disorders. PSQI consists of 19 questions and seven components as follows: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medications, and daytime dysfunction. While some components comprise only one item, others are obtained by grouping several items. The total score

of the seven components gives the total PSQI score. Each answer is scored from 0–3 according to symptom frequency. The total score has a value of 0–21. High values signify poor sleep quality and a high level of sleep disorder. A total score above 5 indicates clinically deficient sleep quality. Cronbach's alpha internal consistency coefficient of the PQSI has been determined as 0.80 [17].

SPSS 20.0 package was used in the statistical analysis of the data. Data were summarized in numbers, percentages, and mean values, and they were analyzed using logistic regression analysis (Enter method). In logistic regression analysis, those with a risk factor were coded as 1, and those without any risk factor were coded as 0.

Results

Of the individuals participating in the study, 42.3% were aged 65–69 years, 59.3% were female, and 37.7% were literate. According to the findings of the present study, 58.3% of elderly individuals were married, 88.4% had at least one child, and 30.3% lived alone. Approximately half (50.6%) stated that they had equal income and expenditure. Illness was present in most subjects, with 72.9% having at least one chronic disease, and 72.7% regularly taking medicine. Habitual smoking was reported by 13.7% of the individuals, and 67.3% took naps in the daytime (Table 1). Cronbach's alpha tau-equivalent reliability of PSQI and ULS were calculated as 0.96.

The mean sleep quality score in elderly subjects was 7.63 ± 3.23 , and 70.4% of the subjects had a sleep quality score of >6 points. On the other hand, the mean ULS of the elderly individuals was 44.264 ± 10.25 . In the study, ULS scores revealed that 46.7% of the subjects exhibited a moderate level of loneliness (Table 2).

Logistic regression analysis was used to determine factors that affected sleep quality in elderly individuals. In the present study, significant risk factors that had a negative effect on sleep quality of elderly individuals were female sex [odds ratio (OR): 2.202, 95% CI: 0.294–0.701], low educational level (OR: 1.941, 95% CI: 1.239–3.041), being single/divorced (OR: 1.659, 95% CI: 1.074–2.562), having no child (OR: 5.681, 95% CI: 0.072–0.428), negative perception of economic status (OR: 2.369, 95% CI: 0.188–0.947), presence of a chronic disease (OR: 2.525, 95% CI: 0.201–0.778), regular medication use (OR: 3.059, 95% CI: 1.566–5.974), daytime sleepiness (OR: 1.926, 95% CI: 0.356–0.756), and feelings of loneliness (OR: 2.688, 95% CI: 0.239–0.578) ($p < 0.05$). On the other hand, age ≥ 75 years (OR: 1.084, 95% CI: 0.578–1.470), smoking (OR: 1.724, 95% CI: 0.320–1.053), and living alone (OR: 1.035, 95% CI: 0.623–1.572) were not shown to be risk factors ($p > 0.05$) (Table 3).

Discussion

According to results of the present study, the mean sleep quality score was 7.63 ± 3.23 . In the study, 70.4% of elderly individuals achieved ≥ 6 points in the sleep quality scale, which indicates poor sleep quality. Our results were in line with sleep quality scores and prevalence of poor sleep quality in elderly individuals reported in the literature, and poor sleep quality is a frequent problem among elderly individuals [4–6]. In addition, the relationship between sleep quality and loneliness is

also well defined in the literature [3,6–8]. An Australian study demonstrated that sleep quality in more than half of the elderly individuals was poor and that they felt moderate levels of

Table 1. Distribution of the elders regarding their socio-demographic characteristics and health conditions

Socio-demographic characteristics	Number(n)	Percentage (%)
Age		
65–69 years	296	42.3
70–74 years	253	36.1
75 years and over	151	21.6
Gender		
Female	415	59.3
Male	285	40.7
Educational status		
Illiterate	227	32.4
Literate	264	37.7
Primary School	145	20.7
Secondary and higher school	64	9.1
Marital Status		
Married	408	58.3
Single	37	5.3
Widowed or divorced	255	36.4
State of having children		
Yes	619	88.4
No	81	11.6
Living alone		
Yes	212	30.3
No	488	69.7
Perceived economic status		
No income	73	10.4
Income less than expenditure	177	25.3
Income equal to expenditure	354	50.6
Income higher than expenditure	96	13.7
Chronic Disease		
Yes	510	72.9
No	190	27.1
Medicine being regularly taken		
Yes	509	72.7
No	191	27.3
State of smoking		
Yes	96	13.7
No	604	86.3
Naps in the daytime		
Yes	471	67.3
No	229	32.7

Table 2. The mean sleep quality score and mean loneliness score of elderly individuals

Score of Scales	n	%	$\bar{x} \pm s$
PUKİ score			
5 and below (good sleep quality)	207	29.6	7.63 ± 3.23
6 and above (bad sleep quality)	493	70.4	
ULS score			
Between 20–34 (low loneliness)	132	18.9	
35–48 (moderate loneliness)	327	46.7	44.264 ± 10.25
49 and above (high loneliness)	241	34.4	

Table 3. Factors affecting sleep quality in elderly individuals

Independent Variables	Odds Ratio	95% Confidence Interval	p
Age \geq 75 years	1.084	(0.578–1.470)	0.733
Female sex	2.202	(0.294–0.701)	0.000
Low educational level	1.941	(1.239–3.041)	0.004
Being single/divorced	1.659	(1.074–2.562)	0.023
Having no child	5.681	(0.072–0.428)	0.000
Negative perception of economic status	2.369	(0.188–0.947)	0.036
Presence of chronic illnesses	2.525	(0.201–0.778)	0.007
Regular medication use	3.059	(1.566–5.974)	0.001
Smoking	1.724	(0.320–1.053)	0.073
Living alone	1.035	(0.623–1.572)	0.966
Daytime sleepiness	1.926	(0.356–0.756)	0.001
Feelings of loneliness	2.688	(0.239–0.578)	0.000
-2 Log likelihood	751.751	R ² : 0.186	

*In logistic regression analysis “enter” method, variables that significantly contributed to the model; and model exclusion criteria were estimated as 0.05.

loneliness; this indicated that there was a positive relationship between loneliness and sleep quality [8]. In line with this study, another study found that feelings of loneliness in elderly individuals affected sleep quality [9]. Interestingly, our results revealed that living alone did not necessarily affect sleep quality in elderly individuals; however, feelings of loneliness had a negative effect on sleep quality (OR: 2.688, 95% CI: 0.239–0.578). Additionally, 46.7% of the subjects in the study felt moderate levels of loneliness, whereas 34.4% of them felt severe levels of loneliness. The results suggest that a considerable proportion of elderly individuals (81.1%) had feelings of loneliness. Accordingly, one would argue that sleep quality in elderly individuals was negatively affected by emotional loneliness rather than living alone. Furthermore, being single/divorced and not having children were identified as risk factors that have a negative effect on sleep quality in elderly individuals. These factors may induce feelings of loneliness in elderly individuals, thereby negatively affecting their sleep quality. In line with the findings of the present study, research on the subject demonstrate that being single/divorced and having no children have a negative effect on sleep quality in elderly individuals [6,18]. Sociodemographic changes in society, alterations in residential structure and lifestyle, growing numbers of nuclear families, increased number of family members in work life, and elderly individuals feeling as a burden may also result in feelings of loneliness, hence negatively affecting sleep quality. Along with these factors that are considered to induce feelings of loneliness, a study conducted in the USA found that old age and health problems such as having trouble in walking, hearing, and eyesight increase the rate of perceived loneliness [19]. Studies by Yang and Chiou [4], Bilgili et al., [6], and Foley [20] determined that elderly individuals with chronic illnesses had poorer sleep quality. It may be suggested that chronic illnesses, sleep quality, and feelings of loneliness are associated with each other. In line with the literature on the subject, the present study demonstrated that the presence of chronic illnesses (OR: 2.525, 95% CI: 0.201–0.778) and regular medication use (OR: 3.059, 95% CI: 1.566–5.974) were among the risk factors that negatively affect sleep quality.

In elderly individuals, the prevalence of multiple medication use and prescribed or nonprescriptive medication use were higher than that in other age groups; therefore, side effects tend to be more prevalent in elderly individuals [21]. Both symptoms related to chronic illnesses as well as side effects of medications used are considered to have a negative effect on sleep quality. Higher educational levels are distinguished as a major factor that positively affects income [22]. Studies have demonstrated that lower income and educational levels in elderly individuals have a negative effect on their sleep quality [6,11,18]. Similarly, in the present study, low perceived income levels and low educational levels were among risk factors that negatively affect sleep quality. It is suggested that elderly individuals would lose their incomes following retirement, and their social roles and status would change along with their sleep habits. Furthermore, individuals with low educational levels tend to have unhealthy lifestyle habits and combined with other factors; it may have a negative effect on their sleep quality.

According to our results, female sex and daytime sleepiness were other risk factors negatively affecting sleep quality. Some studies have suggested that female sex and daytime sleepiness have a negative effect on sleep quality [10,18], whereas others have suggested that female sex and daytime sleepiness do not necessarily affect sleep quality [5,6]. Poor sleep quality in elderly individuals may increase daytime sleepiness; conversely, daytime sleepiness may also negatively affect sleep quality. Regulation of sleeping hours in elderly individuals may prevent daytime sleepiness and thereby enhance their sleep quality.

In conclusion, the study found that the majority of elderly individuals (70.4%) had poor sleep quality. Female sex, low educational levels, being single/divorced, having no children, negative perception of economic status, the presence of chronic illnesses, regular medication use, daytime sleepiness, and feelings of loneliness were identified as risk factors negatively affecting sleep quality. According to the results of the present study, community-based studies should be conducted to evaluate risk factors that have a negative effect on sleep quality in elderly individuals, considering psychological and social care, support, and care and management of chronic illnesses.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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